Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1(Currently amended). A polynucleotide comprising a sequence encoding a polypeptide that is capable of high level presentation of antigenic peptides on antigen-presenting cells, wherein the polypeptide comprises a β2-microglobulin molecule that is linked through its carboxyl ~~terminal~~ terminus to a polypeptide stretch that allows the anchorage of the β2-microglobulin molecule to the cell membrane, and through its amino ~~terminal~~ terminus to at least one antigenic peptide comprising an MHC class I epitope, ~~selected from the group consisting of a~~ that is a tumor-associated antigen (TAA)~~, an antigen from a pathogen selected from the group consisting of a bacterial antigen, a viral antigen, a fungal antigen and a parasite antigen, and at least one idiotypic peptide expressed by autoreactive T lymphocytes~~, wherein said polypeptide stretch at the β_2-microglobulin carboxyl ~~terminal~~ terminus consists of a bridge peptide which spans the whole distance to the cell membrane, said bridge peptide being linked to a polypeptide ~~sequence~~ which can exert the required anchoring function, consisting of the full ~~or partial~~ transmembrane domain and~~/or~~

full or partial cytoplasmic domain of a molecule selected from the group consisting of the human CD3 ζ polypeptide, CD40 and the MHC I class heavy chain of HLA-A, HLA-B or HLA-C molecule.

Claim 2 (Cancelled).

3(Previously presented). The polynucleotide of claim 1, wherein said bridge peptide is the peptide of SEQ ID NO: 1.

Claim 4 (Cancelled).

5(Previously presented). The polynucleotide of claim 1, wherein said bridge peptide is linked to the transmembrane and cytoplasmic domains from the MHC class I heavy chain HLA-A2 molecule of SEQ ID NO:2.

Claims 6-10 (Cancelled).

11(Currently amended). The polynucleotide of claim 1, wherein said at least one antigenic peptide comprising a MHC class I epitope is linked to the β2-microglobulin amino ~~terminal~~ terminus through a peptide linker.

12(Currently amended). The polynucleotide of claim 1, wherein said at least one antigenic peptide is at least one antigenic determinant of one sole antigen or at least one antigenic determinant of each one of at least two different antigens.

Claims 13 and 14 (Cancelled).

15(Currently amended). The polynucleotide of claim ~~14~~1, wherein said TAA is selected from the group consisting of alpha-fetoprotein, BA-46/lactadherin, BAGE, BCR-ABL fusion protein, beta-catenin, CASP-8, CDK4, CEA, CRIPTO-1, elongation factor 2, ETV6-AML1 fusion protein, G250, GAGE, gp100, HER-2/neu, intestinal carboxyl esterase, KIAA0205, MAGE, MART-1/Melan-A, MUC-1, N-ras, p53, PAP, PSA, PSMA, telomerase, TRP-1/gp75, TRP-2, tyrosinase, and uroplakin Ia, Ib, II and III.

16(Currently amended). The polynucleotide of claim ~~15~~12, wherein said at least one antigenic peptide is selected from the group consisting of:

(i) the alpha-fetoprotein peptide GVALQTMKQ (SEQ ID NO:4);

(ii) the BAGE-1 peptide AARAVFLAL (SEQ ID NO:5);

(iii) the BCR-ABL fusion protein peptide SSKALQRPV (SEQ ID NO:6);

(iv) the beta-catenin peptide SYLDSGIHF (SEQ ID NO:7);

(v) the CDK4 peptide ACDPHSGHFV (SEQ ID NO:8);

(vi) the CEA peptide YLSGANLNL (SEQ ID NO:9);

(vii) the elongation factor 2 peptide ETVSEQSNV (SEQ ID NO:10);

(vii) the ETV6-AML1 fusion protein peptide RIAECILGM (SEQ ID NO:11);

(ix) the G250 peptide HLSTAFARV (SEQ ID NO:12);

(x) the GAGE-1,2,8 peptide YRPRPRRY (SEQ ID NO:13);

(xi) the gp100 peptides KTWGQYWQV (SEQ ID NO:14), (A)MLGTHTMEV (SEQ ID NO:15), ITDQVPFSV (SEQ ID NO:16), YLEPGPVTA (SEQ ID NO:17), LLDGTATLRL (SEQ ID NO:18), VLYRYGSFSV (SEQ ID NO:19), SLADTNSLAV (SEQ ID NO:20), RLMKQDFSV (SEQ ID NO:21), RLPRIFCSC (SEQ ID

NO:22), LIYRRRLMK (SEQ ID NO:23), ALLAVGATK (SEQ ID NO:24), IALNFPGSQK (SEQ ID NO:25) and ALNFPGSQK (SEQ ID NO:26);

(xii) the HER-2/neu peptide KIFGSLAFL (SEQ ID NO:27);

(xiii) the intestinal carboxyl esterase peptide SPRWWPTCL (SEQ ID NO:28);

(xiv) the KIAA0205 peptide AEPINIQTW (SEQ ID NO:29);

(xv) the MAGE-1 peptides EADPTGHSY (SEQ ID NO:30) and SLFRAVITK (SEQ ID NO:31);

(xvi) the MAGE-3 peptides EVDPIGHLY (SEQ ID NO:32) and FLWGPRALV (SEQ ID NO:33);

(xvii) the MART-1/Melan-A peptide (E)AAGIGILTV (SEQ ID NO:34);

(xviii) the MUC-1 peptide STAPPVHNV (SEQ ID NO:35);

(xix) the N-ras peptide ILDTAGREEY (SEQ ID NO:36);

(xx) the p53 peptide LLGRNSFEV (SEQ ID NO:37);

(xxi) the PSA peptides FLTPKKLQCV (SEQ ID NO:38) and VISNDVCAQV (SEQ ID NO:39);

(xxii) the telomerase peptide ILAKFLHWL (SEQ ID NO:40);

(xxiii) the TRP-1 peptide MSLQRQFLR (SEQ ID NO:41);

(xxiv) the TRP-2 peptides LLGPGRPYR (SEQ ID NO:42), SVYDFFVWL (SEQ ID NO:43), and TLDSQVMSL (SEQ ID NO:44);

(xxv) the TRP2-INT2 peptide EVISCKLIKR (SEQ ID NO:45); and

(xxvi) the tyrosinase peptide KCDICTDEY (SEQ ID NO:46).

Claim 17 (Cancelled).

18(Currently amended). The polynucleotide of claim ~~17~~12, wherein said at least one antigenic peptide is at least one HLA-A2 binding peptide and at least one HLA-A3 binding peptide derived from the melanoma-associated antigen gp100.

19(Currently amended). The polynucleotide of claim 18, wherein said at least one HLA-A2 binding peptide derived from gp100 is of an amino acid sequence selected from the group consisting of SEQ ID NO: 14, 15, 16, 17, 18, 19, 20, 21 and 22, and said at least one gp100 HLA-A3 binding peptide is of an amino

acid sequence selected from the group consisting of SEQ ID NO: 23, 24, 25 and 26.

Claims 20 (Cancelled).

21(Currently amended). The polynucleotide of claim ~~20~~12, wherein said at least one antigenic peptide is at least one HLA-A2 binding peptide derived from each one of the melanoma associated antigens gp100 and Melan-A/MART-1.

22(Original). The polynucleotide of claim 21, wherein said at least one antigenic peptide is at least one HLA-A3-restricted gp100 and at least one HLA-A2-restricted Melan-A/MART-1 peptide.

Claims 23-28 (Cancelled).

29(Previously presented). The polynucleotide of claim 1 that is an expression vector.

30(Previously presented). An expression vector comprising a polynucleotide according to claim 1.

31(Original). A recombinant viral vector of claim 30.

32(Currently amended). An antigen-presenting cell transfected with a polynucleotide comprising a sequence encoding a polypeptide comprising a β2-microglobulin molecule that is linked through its carboxyl ~~terminal~~ terminus to a polypeptide stretch that allows the anchorage of the β2-microglobulin molecule to the cell membrane, and through its amino ~~terminal~~ terminus to at least one antigenic peptide comprising a MHC class I epitope that is a TAA, wherein said polypeptide stretch at the β_2-microglobulin carboxyl ~~terminal~~ terminus consists of a bridge peptide which spans the whole distance to the cell membrane, said bridge peptide being linked to a ~~sequence~~ polypeptide which can exert the required anchoring function, consisting of the full ~~or~~ ~~partial~~ transmembrane domain and~~/or~~ full or partial cytoplasmic domain of a molecule selected from the group consisting of the human CD3 ζ polypeptide, CD40 and the MHC I class heavy chain of HLA-A, HLA-B or HLA-C molecule.

33(Original). The antigen-presenting cell of claim 32 selected from the group consisting of a dendritic cell, a macrophage, a B cell and a fibroblast.

Claim 34 (Cancelled).

35(Currently amended). The antigen-presenting cell of claim ~~34~~32, wherein said antigenic peptide is at least one peptide derived from at least one TAA.

Claims 36-39 (Cancelled).

40(Original). A cellular vaccine, which comprises an antigen presenting cell of claim 32.

41(Previously presented). The cellular vaccine of claim 40, wherein the antigen presenting cell is selected from the group consisting of a dendritic cell, a macrophage, a B cell and a fibroblast.

Claim 42 (Cancelled).

43(Currently amended). The cellular vaccine of claim ~~42~~41 for ~~prevention or~~ treatment of cancer, wherein the antigen presenting cell presents at least one peptide derived from at least one tumor associated antigen.

Claims 44-46 (cancelled).

47(Currently amended). A method of immunizing a mammal against a tumor-associated antigen comprising the step of immunizing the mammal with a cellular vaccine, which comprises an antigen presenting cell transfected with a polynucleotide comprising a sequence encoding a polypeptide comprising a β2-microglobulin molecule that is linked through its carboxyl ~~terminal~~ terminus to a polypeptide stretch that allows the anchorage of the β2-microglobulin molecule to the cell membrane, and through its amino ~~terminal~~ terminus to at least one antigenic peptide comprising a MHC class I epitope, wherein said antigen presenting cell is selected from the group consisting of a dendritic cell, a macrophage, a B cell or a fibroblast, and said at least one antigenic peptide is at least one peptide derived from at least one tumor-associated antigen, wherein said polypeptide stretch at the β_2-microglobulin carboxyl ~~terminal~~ terminus consists of a bridge peptide which spans the whole distance to the cell membrane, said bridge peptide being linked to a ~~sequence~~ polypeptide which can exert the required anchoring function, consisting of the full ~~or partial~~ transmembrane domain and~~/or~~ full or partial cytoplasmic domain of a molecule selected from the group consisting of the human CD3 ζ polypeptide, CD40 and the MHC I class heavy chain of HLA-A, HLA-B or HLA-C molecule.

Claims 48-51 (Cancelled).

52(Previously presented). A pharmaceutical composition, comprising as an active ingredient at least one antigen presenting cell of claim 32 and a pharmaceutically acceptable carrier.

Claims 53-55 (Cancelled).

56(Currently amended). A polynucleotide comprising a sequence encoding a polypeptide that is capable of high level presentation of antigenic peptides on antigen-presenting cells, wherein the polypeptide comprises a β2-microglobulin molecule that is linked through its carboxyl ~~terminal~~ terminus to a polypeptide stretch that allows the anchorage of the β2-microglobulin molecule to the cell membrane and through its amino ~~terminal~~ terminus to at least one antigenic peptide comprising a MHC class I epitope selected from the group of peptides consisting of SEQ ID NOs:4 to 46, wherein said polypeptide stretch at the β_2-microglobulin carboxyl ~~terminal~~ terminus consists of a bridge peptide which spans the whole distance to the cell membrane, said bridge peptide being linked to a ~~sequence~~ polypeptide which can exert the required anchoring function, consisting of the full or partial transmembrane domain and~~/or~~ full or partial cytoplasmic domain

of a molecule selected from the group consisting of the human CD3 ζ polypeptide and the MHC I class heavy chain of HLA-A2 of SEQ ID NO: 2.

57(Currently amended). A polynucleotide comprising a sequence encoding a polypeptide that is capable of high level presentation of antigenic peptides on antigen-presenting cells, wherein the polypeptide comprises a β_2-microglobulin molecule that is linked through its carboxyl ~~terminal~~ terminus to a polypeptide stretch that allows the anchorage of the β_2-microglobulin molecule to the cell membrane and through its amino ~~terminal~~ terminus to at least one antigenic peptide comprising a MHC class I epitope selected from the group of peptides consisting of SEQ ID NOs:4 to 47, wherein said polypeptide stretch at the β_2-microglobulin carboxyl ~~terminal~~ terminus consists of a bridge peptide which spans the whole distance to the cell membrane, said bridge peptide being linked to a ~~sequence~~ polypeptide which can exert the required anchoring function, consisting of the full ~~or partial~~ transmembrane domain and~~/or~~ full or partial cytoplasmic domain of a molecule selected from the group consisting of the human CD3 ζ polypeptide, the MHC I class heavy chain of HLA-A2 of SEQ ID NO: 2 and CD40.